

IN THE CLAIMS

The following will replace all prior versions, and listings, of the claims in this application.

1-32. (Canceled)

33. (Currently Amended) A process for producing a product gas having heat or fuel value comprising:

feeding a carbonaceous material to a fluidized bed located in a first apparatus, the fluidized bed containing particles suspended in a fluid medium, the fluidized bed including a top portion and a bottom portion, the bottom portion being in communication with a solids collection reservoir located below the bottom portion and separate from the first apparatus in which the fluidized bed is located;

indirectly heating the fluidized bed with a pulse combustion device, a portion of the carbonaceous material fed to the fluidized bed being gasified to form a product gas stream;
receiving bed solids from the fluidized bed directly into the solids collection reservoir;
and

feeding a gaseous medium through the solids collection reservoir and into the bottom portion of the fluidized bed, the gaseous medium comprising an oxygen-containing gas, wherein:
the solids collection reservoir is maintained at a higher temperature than the fluidized bed; and

a first portion of carbon particles within the bed solids received into the solids collection reservoir is oxidized and a second portion of the carbon particles is endothermically converted to a gas.

34. (Original) A process as defined in claim 33, wherein the fluid medium in the fluidized bed comprises steam.

35. (Original) A process as defined in claim 33, wherein the fluidized bed is heated to a

temperature of less than about 1150 degrees F.

36. (Original) A process as defined in claim 33, wherein the fluidized bed is heated to a temperature of less than about 1100 degrees F.

37. (Original) A process as defined in claim 33, wherein the product gas stream is fed to a filtering device for filtering solids entrained in the product gas stream, the filtered solids being recirculated back to the fluidized bed.

38. (Original) A process as defined in claim 33, wherein the gaseous medium fed through the solids collection reservoir contains oxygen in a stoichiometric amount less than about 50%.

39. (Canceled)

40. (Canceled)

41. (Original) A process as defined in claim 33, wherein the carbonaceous material comprises a black liquor.

42. (Original) A process as defined in claim 34, wherein at least a portion of the carbonaceous material fed to the fluidized bed is steam reformed to form the product gas stream.

43. (Original) A process as defined in claim 41, wherein the particles suspended in the fluidized bed comprise sodium carbonate.

44. (Canceled)

45. (Previously Presented) A process as defined in claim 33, wherein the particles suspended in the fluidized bed comprise sodium carbonate and the fluidizing medium comprises steam, the

carbonaceous material being fed to the fluidized bed comprising black liquor, a majority of the black liquor being steam reformed in the fluidized bed.

46-93. (Canceled)

94. (Currently Amended) A process for producing a product gas having heat or fuel value comprising:

feeding a carbonaceous material to a fluidized bed located in a first apparatus, the fluidized bed containing particles suspended in a fluid medium, the fluidized bed including a top portion and a bottom portion, the bottom portion being in communication with a solids collection reservoir located below the bottom portion and separate from the first apparatus in which the fluidized bed is located;

indirectly heating the fluidized bed with a pulse combustion device, a portion of the carbonaceous material fed to the fluidized bed being gasified to form a product gas stream;
receiving bed solids from the fluidized bed directly into the solids collection reservoir;
and

feeding a gaseous medium through the solids collection reservoir and into the bottom portion of the fluidized bed, the gaseous medium comprising an oxygen-containing gas and gasifying carbon particles within the bed solids received into the solids collection reservoir, wherein:

the solids collection reservoir is maintained at a higher temperature than the fluidized bed.

95. (Previously Presented) A process as defined in claim 94, wherein the fluid medium in the fluidized bed comprises steam.

96. (Previously Presented) A process as defined in claim 95, wherein at least a portion of the carbonaceous material fed to the fluidized bed is steam reformed to form the product gas stream.

97. (Previously Presented) A process as defined in claim 94, wherein the fluidized bed is

heated to a temperature of less than about 1150 degrees F.

98. (Previously Presented) A process as defined in claim 94, wherein the fluidized bed is heated to a temperature of less than about 1100 degrees F.

99. (Previously Presented) A process as defined in claim 94, wherein the product gas stream is fed to a filtering device for filtering solids entrained in the product gas stream, the filtered solids being recirculated back to the fluidized bed.

100. (Previously Presented) A process as defined in claim 94, wherein the gaseous medium fed through the solids collection reservoir contains oxygen in a stoichiometric amount less than about 50%.

101. (Previously Presented) A process as defined in claim 94, wherein a first portion of carbon particles within the bed solids received into the solids collection reservoir is oxidized and a second portion of the carbon particles is endothermically converted to a gas.

102. (Previously Presented) A process as defined in claim 94, wherein the carbonaceous material comprises a black liquor.

103. (Previously Presented) A process as defined in claim 102, wherein the particles suspended in the fluidized bed comprise sodium carbonate.

104. (Canceled)

105. (Previously Presented) A process as defined in claim 94, wherein the particles suspended in the fluidized bed comprise sodium carbonate and the fluidizing medium comprises steam, the carbonaceous material being fed to the fluidized bed comprising black liquor, a majority of the black liquor being steam reformed in the fluidized bed, and wherein a first portion of the carbon

particles within the bed solids received into the solids collection reservoir is oxidized and a second portion of the carbon particles is steam reformed.

106. (Currently Amended) A process for producing a product gas having heat or fuel value comprising:

feeding a carbonaceous material to a fluidized bed located in a first apparatus, the fluidized bed containing particles suspended in a fluid medium, the fluidized bed including a top portion and a bottom portion, the bottom portion being in communication with a solids collection reservoir located below the bottom portion and separate from the first apparatus in which the fluidized bed is located;

indirectly heating the fluidized bed with a pulse combustion device, a portion of the carbonaceous material fed to the fluidized bed being gasified to form a product gas stream;

receiving bed solids from the fluidized bed directly into the solids collection reservoir;
and

feeding a gaseous medium through the solids collection reservoir and into the bottom portion of the fluidized bed, wherein:

the solids collection reservoir is maintained at a higher temperature than the fluidized bed;

the particles suspended in the fluidized bed comprise sodium carbonate;

the fluid medium comprises steam and an oxygen-containing gas;

the carbonaceous material being fed to the fluidized bed comprises black liquor, a majority of the black liquor being steam reformed in the fluidized bed, and

a first portion of carbon particles within the bed solids received into the solids collection reservoir is oxidized, and a second portion of the carbon particles is steam reformed.

107. (Previously Presented) A process as defined in claim 106, wherein the fluidized bed is heated to a temperature of less than about 1150 degrees F.

108. (Previously Presented) A process as defined in claim 106, wherein the fluidized bed is

heated to a temperature of less than about 1100 degrees F.

109. (Previously Presented) A process as defined in claim 106, wherein the product gas stream is fed to a filtering device for filtering solids entrained in the product gas stream, the filtered solids being recirculated back to the fluidized bed.

110. (Previously Presented) A process as defined in claim 106, wherein the gaseous medium fed through the solids collection reservoir contains oxygen in a stoichiometric amount less than about 50%.

111. (Canceled)

112. (Canceled)

113. (Canceled)

114. (Canceled)

115. (Previously Presented) A process as defined in claim 33, further comprising:
introducing steam via a port directly into the fluidized bed, to serve as the fluidizing medium.

116. (Previously Presented) A process as defined in claim 94, further comprising:
introducing steam via a port directly into the fluidized bed to serve as the fluidizing medium.

117. (Previously Presented) A process as defined in claim 106, further comprising:
introducing steam via a port directly into the fluidized bed to serve as the fluidizing medium.

118. (Previously Presented) A process as defined in claim 33, wherein the solids collection reservoir is configured as a fixed bed.

119. (Previously Presented) A process as defined in claim 94, wherein the solids collection reservoir is configured as a fixed bed.

120. (Previously Presented) A process as defined in claim 106, wherein the solids collection reservoir is configured as a fixed bed.